



#358

Hubble Space Telescope

Early Release HRS/FOS Observations

90-037B-02A

90-037B-03A

Early Release with PC/WF Observations/  
Early Release FOC Observations

90-037B-07A

90-037B-08A

Hubble Space Telescope

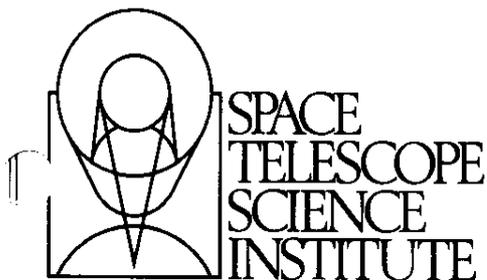
90-037B-02A

90-037B-03A

Early Release HRS/FOS Observations

This dataset catalog consists of one 9-track, 6250 BPI, binary tape. The D and C number are as follows:

D#	C#	FILES
D-82735	C-27938	260



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Chris Blades: Telescope & Instruments Branch Chief

January 25, 1991

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Span: Blades::Scivax  
Bitnet: Blades@stsci.bitnet

Dear Colleague,

Please find enclosed a magnetic tape containing some of the first spectroscopic observations obtained with the Faint Object Spectrograph and the Goddard High Resolution Spectrograph. These data were obtained by the Investigation Definition Teams during autumn 1990 as part of the Science Assessment and Early Release program. The FOS observations contain spectra of the standard star WD0501+527, which is useful for flat field purposes and to show the instrumental response, and observations of the central region of NGC1068. The GHRS observations are of three external targets, chi Per, M42, and alpha Tau, through both the small and large apertures, and will be useful for comparing resolution between apertures. These observations are only a small sample of the data obtained.

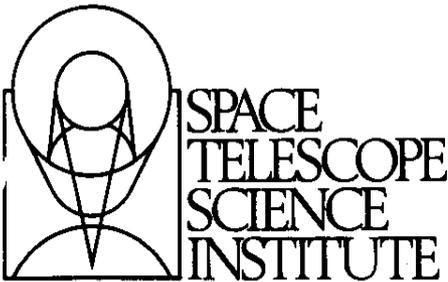
The data are being sent on magnetic tape to General Observers who were awarded time in Cycle 1 for programs which use the spectrographs and to GTOs with spectroscopic time. General Observers are reminded that all Cycle 1 programs are under review at the present time. Recipients of this magnetic tape should not distribute the data outside their own team without first checking with the Principal Investigators who are Richard Harms (FOS) and Jack Brandt (GHRS). Scientific investigations with these data are already underway by the IDTs. Please talk with the PIs or STScI Instrument Scientists (FOS: George Hartig and Anne Kinney; GHRS: Doug Duncan and Ron Gilliland) if you have any questions concerning the data. Bidushi Bhattacharya (FOS) and Laura Ferrarese (GHRS) provided the contents for this tape. The data are in FITS format.

You should bear in mind when inspecting the data that they are early observations, and not all the software bugs have been fixed nor all the calibration problems ironed out. In particular, many of the files used to calibrate the data are derived from ground observations some of which are know inappropriate. In other words: treat the data with care.

A listing of the contents of the tape is enclosed and plots of the data are provided. For the FOS, both unprocessed data and calibration pipeline products are provided. For the GHRS, we have included the results from adding FP SPLIT observations, in addition to the unprocessed and calibrated output.

Yours sincerely

*Chris Blades*



Sample FOS Data

DATASET	TARGET	SIZE	DETECTOR	APER	FILTER/GRATING
YOCY0203T.*	WD0501+527	[2064,1]	AMBER	B-3	H27
YOCY0205R.*	WD0501+527	[2064,5] <sup>①</sup>	AMBER	B-3	H57
YOCY0206R.*	WD0501+527	[2064,1]	AMBER	B-3	H40
YODV0305T.*	NGC1068-NUC	[2064,1]	AMBER	B-2	H27
YODV0306T.*	NGC1068-NUC	[2064,1]	AMBER	B-2	H57
YODV0307T.*	Int. Cal. Lamp	[2064,1]	AMBER	B-2	H57
YODV0308T.*	NGC1068-NUC	[2064,1]	AMBER	B-2	H40

FILETYPES:<sup>②</sup>

RAW -- .d0h & .d0d - uncalibrated science data  
 .q0h & .q0d - data quality file  
 .shh & .shd - science header line  
 .ulh & .uld - unique data log  
 .trl - trailer file (ASCII)

CALIBRATED -- .c0h & .c0d - wavelength (wavelength vs. pixel)  
 .c1h & .c1d - calibrated flux (flux vx. pixel)  
 .c2h & .c2d - propagated statistical error  
 .c4h & .c4d - count rate  
 .c5h & .c5d - flat-fielded object spectrum (generic flat fields used)  
 .c7h & .c7d - background spectrum (standard background spectrum used)  
 .cqh & .cqd - output data quality file

- ① - This observation contains 5 intermediate readouts because of long exposure time.
- ② - Header files are designated as y\*.\*h (ASCII) and data files are designated as y\*.\*d (binary).

## Tape Directory of HST Early Release Data from GHRS and FOS

Position	Format	File Name	Object	Grating/Aperature	
FILE	001	FITS	averdd5106m_cvt.c0h	alpha Tau	Ech B/LSA
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FILE	003	FITS	averdd510fm_cvt.c0h	alpha Tau	Ech B/SSA
FILE	004	FITS	averdd510fm_cvt.c1h		
FILE	005	FITS	averdd510kt_cvt.c0h	alpha Tau	G270M/SSA
FILE	006	FITS	averdd510kt_cvt.c1h		
FILE	007	FITS	fpsplitde0106t_cvt.c0h	xi Per	Ech A/LSA
FILE	008	FITS	fpsplitde0106t_cvt.c1h		
FILE	009	FITS	fpsplitde010jt_cvt.c0h	xi Per	Ech A/SSA
FILE	010	FITS	fpsplitde010jt_cvt.c1h		
FILE	011	FITS	fpsplitdz0209m_cvt.c0h	M42	G140L/LSA
FILE	012	FITS	fpsplitdz0209m_cvt.c1h		
FILE	013	FITS	fpsplitdz020ht_cvt.c0h	M42	G140L/SSA
FILE	014	FITS	fpsplitdz020ht_cvt.c1h		
FILE	015	FITS	grande0106t_cvt.hhh	xi Per	Ech A/LSA
FILE	016	FITS	grande010jt_cvt.hhh	xi Per	Ech A/SSA
FILE	017	FITS	grandz0209m_cvt.hhh	M42	G140L/LSA
FILE	018	FITS	grandz020ht_cvt.hhh	M42	G140L/SSA
FILE	019	FITS	y0cy0203t_cvt.c0h	WD0501+527	H27/B-3
FILE	020	FITS	y0cy0203t_cvt.c1h		
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FILE	056	FITS	y0dv0305t_cvt.c5h		
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Int. Cal. Lamp Ech B/SC1

alpha Tau Ech B/SSA

Int. Cal. Lamp G270M/SC1

alpha Tau G270M/SSA

xi Per Ech A/LSA

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FILE	221	FITS	z0dz020gt_cvt.cqh
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FILE	223	FITS	z0dz020gt_cvt.q0h
FILE	224	FITS	z0dz020gt_cvt.shh
FILE	225	FITS	z0dz020gt_cvt.ulh
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FILE	227	FITS	z0dz020gt_cvt.xqh
FILE	228	FITS	z0dz020ht_cvt.c0h
FILE	229	FITS	z0dz020ht_cvt.c1h
FILE	230	FITS	z0dz020ht_cvt.c2h
FILE	231	FITS	z0dz020ht_cvt.c3h
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xi Per

Ech A/SSA

Int. Cal. Lamp G140L/SC2

M42

G140L/LSA

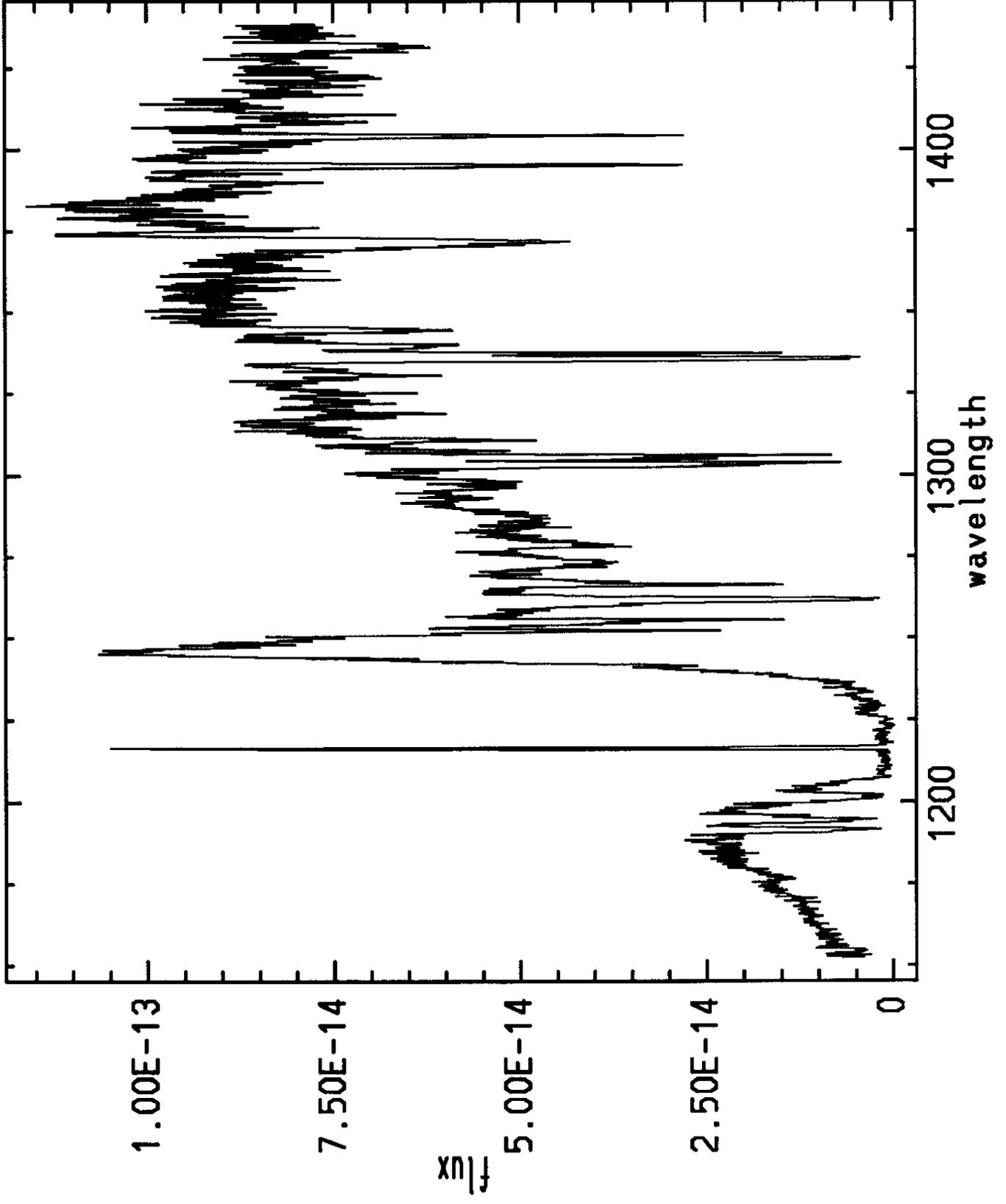
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M42

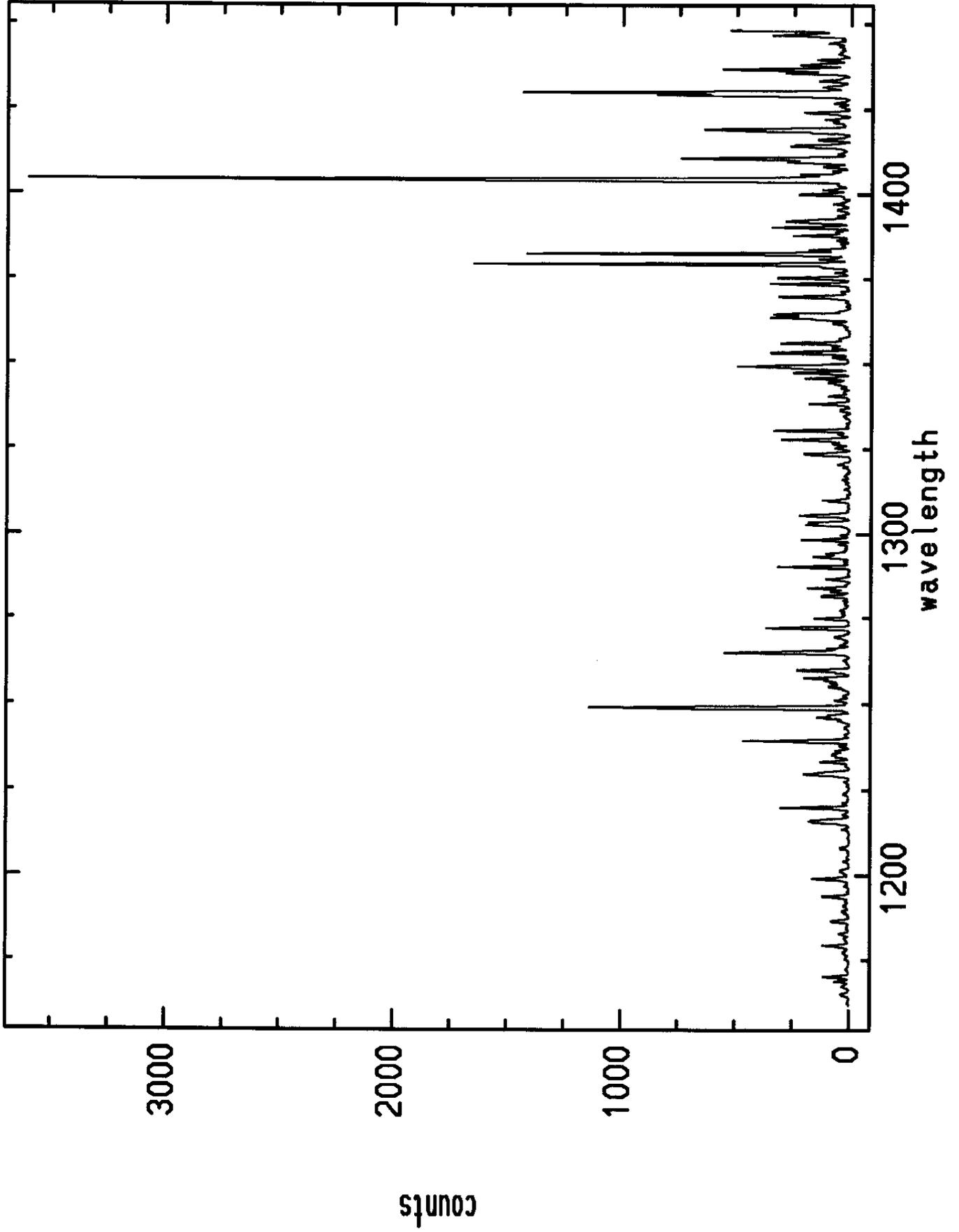
G140L/SSA

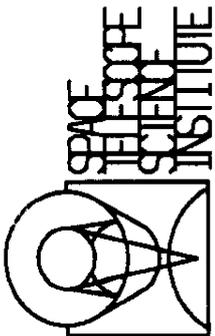
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FILE	243	FITS	y0cy0205r.tr1	WD0501+527	H57/B-3
FILE	244	FITS	y0cy0206r.tr1	WD0501+527	H40/B-3
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FILE	246	FITS	y0dv0306t.tr1	NGC1068-NUC	H57/B-2
FILE	247	FITS	y0dv0307t.tr1	Int. Cal. Lamp	H57/B-2
FILE	248	FITS	y0dv0308t.tr1	NGC1068-NUC	H40/B-2
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FILE	250	FITS	z0dd5108m.tr1	alpha Tau	G270M/LSA
FILE	251	FITS	z0dd510dm.tr1	Int. Cal. Lamp	Ech B/SC1
FILE	252	FITS	z0dd510fm.tr1	alpha Tau	Ech B/SSA
FILE	253	FITS	z0dd510jt.tr1	Int. Cal. Lamp	G270M/SC1
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FILE	258	FITS	z0dz0209m.tr1	M42	G140L/LSA
FILE	259	FITS	z0dz020gt.tr1	Int. Cal. Lamp	G140L/SC1
FILE	260	FITS	z0dz020ht.tr1	M42	G140L/SSA

GHRS PROPOSAL 3030: zvjz020ht, fpsplit020ht



GHRS PROPOSAL J30: z0dz020gt



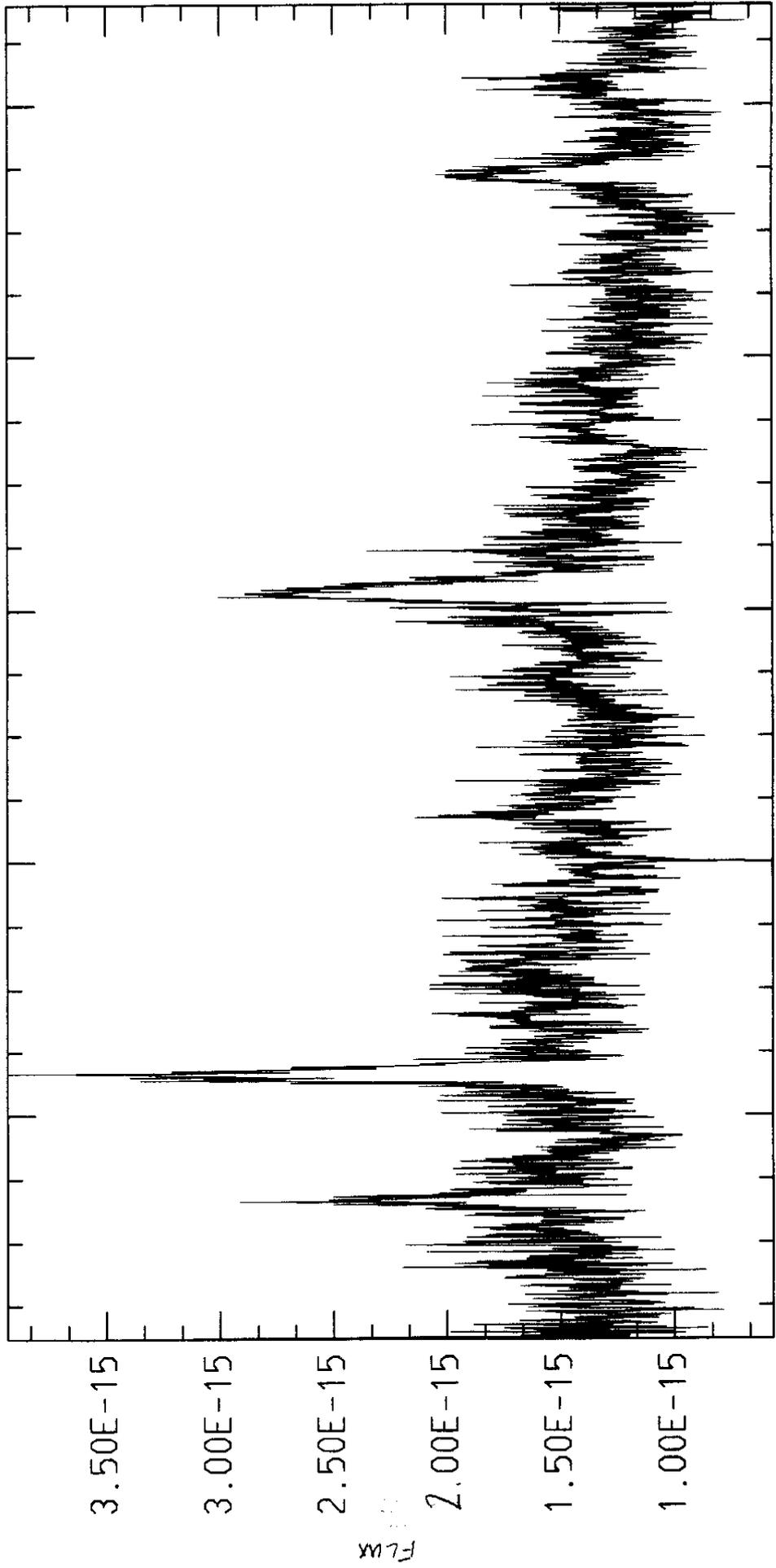


OBSERVER \* FORD  
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 TARGET RA \* 02:42:40.6  
 TARGET DEC \* 0:00:48.6  
 OBJ APERTURE \* YR00\_3  
 SKY APERTURE \*  
 POSN ANGLE \* 72.3617  
 OBS DATE \* 29-OCT-1990  
 OBS TIME \* 22:16:00  
 FILENAME \* Y00Y00001.C1H  
 DETECTOR \* AMBER

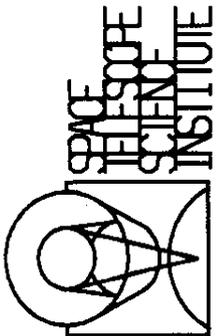
DISPENSER \* N27  
 POLARIZER \* CLEAR  
 EXPOSURE \* 75.0000  
 LVTITLE \* 0.500000  
 DEADTIME \* 0.100000E-01  
 IMTS \* 1  
 PATTERNS \* 30  
 READOUTS \* 1  
 MEN CLEAN \* 1  
 OBS MODE \* SPECTROSCOPY  
 X BASE \* 1

Y BASE \* 346  
 1ST CHANNEL \* 0  
 NMAP CHANNELS \* 212  
 CURB \* 5  
 SUB-STEP \* 4  
 BINS \* 1  
 Y-SIZE \* 1  
 Y-SPACE \* 0  
 SPECTRUM \* 1

FAINT OBJECT SPECTROGRAPH



λ

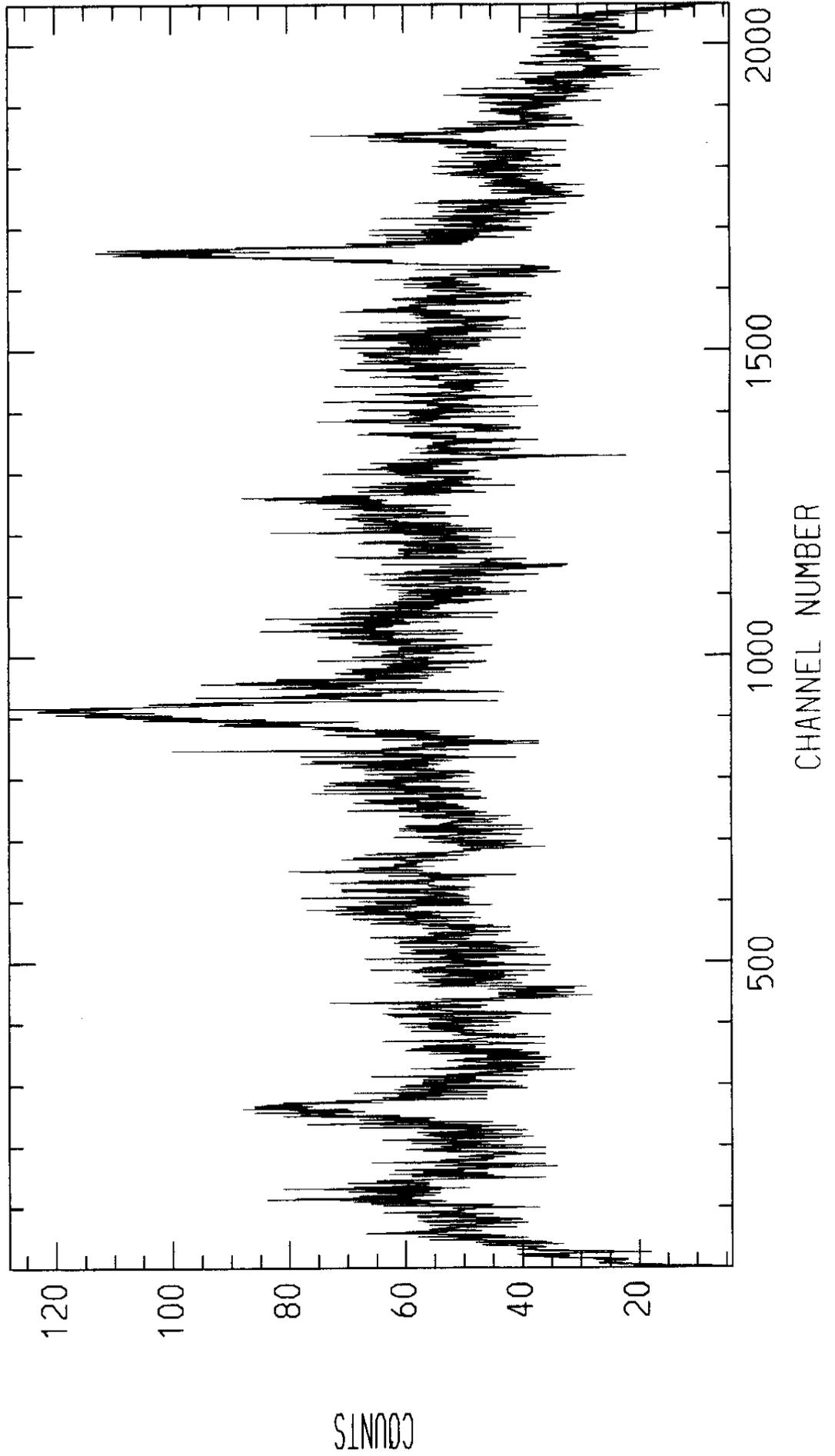


OBSERVER = FIRD  
 TARGET ID = 3075.2  
 TARGET RA = 02:42:40.6  
 TARGET DEC = 0:00:48.6  
 OBJ APERTURE = Y800\_3  
 SKY APERTURE =  
 POSN ANGLE = 72.3817  
 OBS DATE = 29-OCT-1990  
 OBS TIME = 23:16:00  
 FILENAME = T00V00001.D04  
 DETECTOR = AMBER

DISPERSER = H27  
 POLARIZER = CLEAR  
 EXPD/PPIX = 75.00000  
 LIVE TIME = 0.500000  
 DEAD TIME = 0.100000E-01  
 BINTS = 1  
 PATTERNS = 30  
 READOUTS = 1  
 MEN CLEANS = 1  
 OBS MODE = SPECTROSCOPY  
 X BASE = 1

Y BASE = 346  
 1ST CHANNEL = 0  
 NUM CHANNELS = 512  
 CONB = 5  
 SUB-STEP = 4  
 BINS = 1  
 Y-STEP = 1  
 Y-SPACE = 0  
 SPECTRUM = 1

### FAINT OBJECT SPECTROGRAPH



## TECHNICAL NOTES FOR READING THE GHRS DATA

Here are reported a few notes which are intended to facilitate the reading of the GHRS data contained in the enclosed tape. For further information, please refer to the GHRS handbook and to the ICD19 document.

### FILE EXTENSIONS

Header files are designated as z\*.\*h (ASCII) and data files are designated by z\*.\*d (binary)

#### Input files

.shh & .shd

Standard Header Packet: contains telemetry values for HRS specific software monitors and the current value table which includes calibration critical engineering data.

.ulh & .uld

Unique Data Log: contains the observation control table for the current observation as well as some observation data produced by the flight software.

.d0h & .d0d

Science Data Files: HRS science data consists of single precision floating point values for the 500 science diodes.

.x0h & .x0d

Extracted Data Files: contain the single precision floating point values for the twelve special diodes.

.q0h & .q0d and .xqh & .xqd

Data Quality Files: contain flags or fill values for bad data.

#### Output files from calibration

.c0h & .c0d

Calibrated Wavelength Files: contain double precision floating point calibrated wavelengths for the

science diodes.

.c1h & .c1d

Calibrated Flux Files: contain double precision floating point calibrated fluxes for the science diodes.

.c2h & .c2d

Propagated Statistical Error Files: contain a measure of the statistical errors of the original data values.

.cqh & .cqd

Wavelength/Flux Data Quality Files: flag bad pixel values in the Calibrated Wavelength, Flux and propagated Statistical Errors files.

.c3h & .c3d

Calibrated Special Diodes: contain the calibrated values of the special diodes.

.c4h & .c4d

Special Diodes Data Quality Files: flag bad pixel values in the calibrated special Diodes Files.

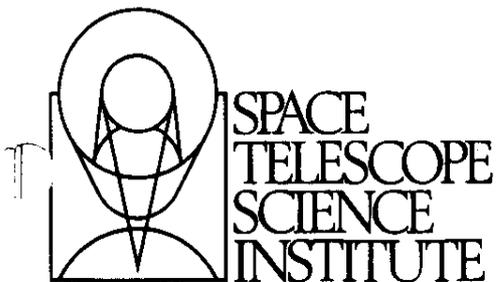
A few files which are not produced by the standard onboard calibration techniques are included in the tape. These files are designated by:

**AVER\*.\*** : the calibration procedure applied by PODPS does not merge spectra resulting from repeated exposures. As a consequence, the calibrated output files \*.c0h & \*.c0d and \*.c1h & \*.c1d have a number of groups equal to the number of repeats plus one. These groups have been merged using standard IRAF tools. The resulting files are AVER\*.c0h & c0d and AVER\*.c1h & c1d for the Calibrated Wavelength and Flux Files, respectively.

**FPSPLIT\*.\*** : for each observation in which the FPSplit technique was applied, the calibrated output files \*.c0h & \*.c0d and \*.c1h & \*.c1d have four separate groups, each corresponding to

an integration at a different carousel position. These four groups have been merged, using standard IRAF tools. The resulting files are FPSPLIT\*.c0h & c0d and FPSPLIT\*.c1h & c1d for the Calibrated Wavelength and Flux Files, respectively.

GRAN\*.hh\*: for each FPSplit observation, these files contain a solution for the photocathode granularity vector. This solution is provided when the FPSplit observations are combined.



SAMPLE OF GHRS DATA

PROPOSAL 3021 (October 11, 1990)

Root Name	Target	Substep	FPSplit	Repeats	Aperture	Detector	Grating	Sp. Order
z0de0106t	$\xi$ Per	1/2	yes	0	LSA	1	Ech A	43
z0de010jt	$\xi$ Per	1/2	yes	0	SSA	1	Ech A	43

PROPOSAL 3023 (November 27, 1990)

Root Name	Target	Substep	FPSplit	Repeats	Aperture	Detector	Grating	Sp. Order
z0dz0209m	M42	1/4	yes	0	LSA	1	G140L	1
z0dz0208t	Int.Cal.Lamp	1/4	no	0	SC2	1	G140L	1
z0dz020gt	Int.Cal.Lamp	1/4	no	0	SC1	1	G140L	1
z0dz020ht	M42	1/4	yes	0	SSA	1	G140L	1

PROPOSAL 3030 (November 24, 1990)

Root Name	Target	Substep	FPSplit	Repeats	Aperture	Detector	Grating	Sp. Order
z0dd5106m	$\alpha$ Tau	1/4	no	2	LSA	2	Ech B	24
z0dd5108m	$\alpha$ Tau	1/4	no	0	LSA	2	G270M	1
z0dd510dm	Int.Cal.Lamp	1/4	no	0	SC1	2	Ech B	24
z0dd510fm	$\alpha$ Tau	1/4	no	0	SSA	2	Ech B	24
z0dd510jt	Int.Cal.Lamp	1/4	no	0	SC1	2	G270M	1
z0dd510kt	$\alpha$ Tau	1/4	no	3	SSA	2	G270M	1

\$NOP \*\*\*\*\* ROB-B \*\*\*\*\*  
\$SEX TPLIST BS

INPUT PARAMETERS ARE: AS SR=1 1 1

TAPE NO. 1 FILE NO. 1  
RECORD 1 LENGTH 288  
SAMPLE = 32 / FITS STANDA RD  
ER OF AXES 32 / FITS BITS/PIXEL  
NAXIS1 = 2000 / NAXIS = 2000 / BITPIX = 1 / NUMP  
BLOCKED = 1 / Tape may be blocked

EXTEND = 1 / There maybe stancard extensions  
2272.09916452E-9 / REAL = TAPE\*BSCALE + BZERO  
BZERO = 2.3271363525391E3 / PSCALE = 2.9  
1216 / PSIZE of original i

ORIGIN = 'SISCI-SISDAS' /  
FITSDATE = '15/01/91' / Date FITS file was created  
averdd5106m cvt.ech / NAME OF IRAF IMAGE FILE  
IRAF-MAX = 2.320860E3 / DATA MIN  
IRAF-MIN = 32 / DATA BITS/PIXEL  
IRAF-B/PE / SDASMON

IRATYPE = 'FLOATING' /  
U = 1 / Number of groups in original image  
1485 CRVAL2 = -1. CRVAL1 = 149777350.02  
CRPIX1 = 1. CRPIX3 = -1. CRPIX2 = -1.

ERRCNT = 0  
PKTIME = '27-NOV-1990 15:54:37.32' /  
CTYPE2 = 'RA---TAN' / CTYPE1 = 'CHANNEL'  
OBSINT = 1642 / OBSRPT = 1 / XDEF = 2048  
SAMPLE = 0.2507202 / YDEF = 28.9761

DELTA = 1  
Deltas = 0.2507202

\*\*\*\*\* JOB DONE.  
\$SEX TPLIST BS

INPUT PARAMETERS ARE: AS SR=1 1 1 26  
TAPE NO. 1 FILE NO. 26  
RECORD 1 LENGTH 2880  
SAMPLE = 8 / Character information  
NAXIS = 1 / No. 1  
EXTEND = 1 / There maybe standard ex  
tensions  
IRAFNAME = 'null\_image' / DATE = '15/01/91' / Data tape was written  
IRAFNAME = 'null\_image' / ZERO LENGTH DUMMY IMAGE  
END

90-037B-07A+7B

HS Hubble Space Telescope

90-037B-07A

90-037B-08A

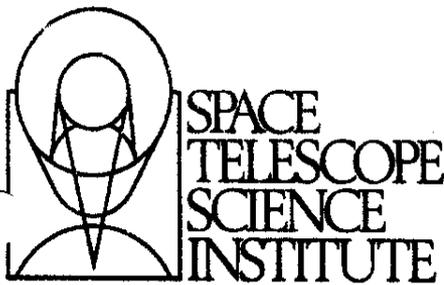
Early Release with PC/WF Observations

Early Release FOC Observations

This dataset catalog consists of one 9-track, 6250 BPI, binary tape.

The D and C number are as follows:

D#	C#	FILES	
D-82333	C-27880	1-18	Early Rel. WF/PC OBS.
		19-38	Early Rel. FOC OBS.



*letter p.1*

3700 San Martin Drive  
Baltimore, MD 21218  
(301) 338-4700  
Telex 6849101

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Chris Blades: Telescope & Instruments Branch Chief

301 338 4805  
Fax: 301 338 4767  
Span: Blades::Scivax  
Bitnet: Blades@stsci.bitnet

21 September 1990

Dear Colleague,

Please find enclosed a magnetic tape containing some of the first results obtained with the Hubble Space Telescope cameras. These data were obtained by the Investigation Definition Teams during August 1990 as part of the Science Assessment and Early Release observations. Further details of these programs can be found in the August issue of the STScI Newsletter. We are releasing these data now to facilitate your own reassessment of your HST observing program. Accordingly, this data tape is being distributed to all general observers and guaranteed time observers who have HST time in forthcoming observing cycles. You should not distribute these data outside your own team without first checking with the Principal Investigators who are Jim Westphal (WF/PC) and Duccio Macchetto (FOC).

A second data tape containing spectrograph observations will be compiled and distributed once these data are in hand (probably by early November). We are also compiling a collection of OTA point spread function images for our own analysis of the spherical aberration and plan to have these data generally available in the months ahead.

You should bear in mind when inspecting these images that they are early data, and not all the software bugs have been fixed nor all the calibration wrinkles ironed out. In particular, many of the files used to calibrate the data are derived from ground observations which are now inappropriate. In other words: treat the data with care.

Scientific investigations utilizing these data are already underway by the Investigation Definition Teams. The IDTs are going to submit the scientific results for rapid publication. Specific contacts for these data are given on the next page. Please talk with the PIs or the contact scientists if you have questions about the data.

Target	Team	IDT Lead	STScI contact
NGC1850	WF/PC	Baum	Gilliland (x4454)
NGC925	WF/PC	Light	Griffiths (x4824)
NGC188	WF/PC	Westphal	Mackenty (x4559)
NGC7457	WF/PC	Lauer	Oergerle (x4744)
M15	WF/PC	Faber	Gilliland (x4454)
Saturn	WF/PC	Westphal	Weaver (x4765)
R Aquarii	FOC	Paresce (x4823)	Nota (x4520)
R136A	FOC	Weigelt (x5004)	Greenfield (x4783)
SN1987A	FOC	Jakobsen (x5004)	Panagia (x4916), Kirshner (CfA)

Note: The WF/PC IDT are located at Bowie State College and can be contacted by telephone ( 301 464 9624) and Fax (301 805 9205). The FOC IDT are at STScI. Two observations of SN1987A were taken. The one included on this tape is from a GO program with Bob Kirshner (CfA, Harvard) as PI.

There are 18 WF/PC files on the tape in the following order.

Target	Filename	Cam	Filter	Exp Time	Comments
NGC1850	w0bs0102t	WF	F555W	1100s	LMC Cluster
NGC925	w0bu0101t	WF	F555W	950s	Spiral Arm
NGC925	w0bu0102t	WF	F555W	950s	CR SPLIT
NGC188	w0bv0102t	WF	F555W	12s	PSF obs
NGC7457	w0bw0103t	PC	F555W	400s	S0 Galaxy
M15	w0cg0108t	PC	F336W	100s	poor tracking
Saturn	w0ck0101t	WF	F439W	0.4s	coarse track
Flat Field #1	a3u15306w	WF	F336W	...	for F336W
Flat Field #2	f439w	WF	F439W	...	for F439W
Flat Field #3	f555wa	WF	F555W	...	for F555W
Flat Field #4	f547m	WF	F547M	...	for F547M

The 20 FOC files conclude the data set.

Target	Filename	Cam	Filter	Exp Time	Comments
R Aquarii	x0c90101t	f/96	F501N	597s	Stellar jet
SN1987A	x0c80106t	f/96	F501N	822s	LMC supernova
PSF #1	x0cj010bt	f/96	F501N	721s	for above images
R136A	x0bq0102t	f/96	F346M/F8ND	259s	LMC cluster
PSF #2	x0cj010ct	f/96	F346M/F4ND	723s	for above image

Both uncalibrated and calibrated images are provided on the tape. The .d0h is the uncalibrated image and the .c0h and .c1h (for FOC only) are the images after routine calibration. Also included are the standard headers (.shh) for FOC. The calibration processes are described in the STSDAS Calibration Guide (16 April 1990). For WF/PC calibrated data the bias, preflash, and dark reference files were obtained from laboratory testing of WF/PC prior to flight. The A to D correction was obtained from on-orbit data. The WF F555W and F439W flat fields were obtained from the average of observations of the sunlit earth. The NGC7457 observation was calibrated using an F547M flat field made on-orbit. The M15 observation was calibrated using laboratory flat field data. The flat fields are included on the tape. Users are cautioned that some of the keywords in the image headers are currently reported incorrectly. For FOC calibrated data the flat field and geometric reference files were obtained from laboratory measurements; these are in the process of being improved. For FOC we have included PSF examples. These exposures are not particularly long but do give a general impression of the FOC PSF at those two wavelengths.

In all cases the reference files used for calibration purposes are provisional and liable to be significantly improved in the near future. (A major purpose of the Science Verification program starting soon is to derive good on-orbit reference data for calibration.)

A listing of the tape is enclosed with this letter.

The data tape is in FITS format, 6250bpi, with a blocking factor of 10. Difficulties in reading the tape should be directed to the STScI STSDAS group (Bob Hanisch x4910).

Yours Sincerely

*Chris Blades*

Chris Blades (Telescope & Instruments Branch Chief)

*Duccio Macchetto*

Duccio Macchetto (Science Programs Division Head)

## LISTING OF TAPE LOG

log-1

## WF/PC IMAGES

FILE#	IRAFNAME	Dimensions			BP	DATE	OBJECT
1	w0bs0102t_cvt.d0h	800	800	4	16	17/08/90	NGC 1850 (unprocessed)
	w0bs0102t_cvt.d0h.tab	584	4		Nc=	37	
2	w0bs0102t_cvt.c0h	800	800	4	16	17/08/90	NGC 1850 (processed)
	w0bs0102t_cvt.c0h.tab	584	4		Nc=	37	
3	w0bu0101t_cvt.d0h	800	800	4	16	16/08/90	NGC 925 (unprocessed)
	w0bu0101t_cvt.d0h.tab	584	4		Nc=	37	
4	w0bu0101t_cvt.c0h	800	800	4	16	16/08/90	NGC 925 (processed)
	w0bu0101t_cvt.c0h.tab	584	4		Nc=	37	
5	w0bu0102t_cvt.d0h	800	800	4	16	17/08/90	NGC 925 (unprocessed)
	w0bu0102t_cvt.d0h.tab	584	4		Nc=	37	
6	w0bu0102t_cvt.c0h	800	800	4	16	17/08/90	NGC 925 (processed)
	w0bu0102t_cvt.c0h.tab	584	4		Nc=	37	
7	w0bv0102t_cvt.d0h	800	800	4	16	16/08/90	NGC 188 (unprocessed)
	w0bv0102t_cvt.d0h.tab	584	4		Nc=	37	
8	w0bv0102t_cvt.c0h	800	800	4	16	16/08/90	NGC 188 (processed)
	w0bv0102t_cvt.c0h.tab	584	4		Nc=	37	
9	w0bw0103t_cvt.d0h	800	800	4	16	17/08/90	NGC 7457 (unprocessed)
	w0bw0103t_cvt.d0h.tab	584	4		Nc=	37	
10	w0bw0103t_cvt.c0h	800	800	4	16	17/08/90	NGC 7457 (processed)
	w0bw0103t_cvt.c0h.tab	584	4		Nc=	37	
11	w0cg0108t_cvt.d0h	800	800	4	16	26/08/90	M15 (unprocessed)
	w0cg0108t_cvt.d0h.tab	584	4		Nc=	37	
12	w0cg0108t_cvt.c0h	800	800	4	16	26/08/90	M15 (processed)
	w0cg0108t_cvt.c0h.tab	584	4		Nc=	37	
13	w0ck0101t_cvt.d0h	800	800	4	16	26/08/90	Saturn (unprocessed)
	w0ck0101t_cvt.d0h.tab	584	4		Nc=	37	
14	w0ck0101t_cvt.c0h	800	800	4	16	26/08/90	Saturn (processed)
	w0ck0101t_cvt.c0h.tab	584	4		Nc=	37	
15	a3u15306w_cvt.r6h	800	800	4	16	11/11/89	Flat (F336W)
	a3u15306w_cvt.r6h.tab	579	4		Nc=	37	
16	f439w_cvt.r6h	800	800	4	16	02/08/90	Flat (F439W)
	f439w_cvt.r6h.tab	584	4		Nc=	37	
17	f555wa_cvt.r6h	800	800	4	16	01/08/90	Flat (F555W)
	f555wa_cvt.r6h.tab	584	4		Nc=	37	
18	f547m_cvt.r6h	800	800	4	16	24/07/90	Flat (F547M)
	f547m_cvt.r6h.tab	584	4		Nc=	37	

## LISTING OF TAPE LOG (CONTINUED)

log-2

## FOC IMAGES

19	x0c90101t_cvt.c0h x0c90101t_cvt.c0h.tab	1024 335	1024 1	16 Nc=	23/08/90 20	RAqr (processed)
20	x0c90101t_cvt.clh x0c90101t_cvt.clh.tab	1024 335	1024 1	16 Nc=	23/08/90 20	RAqr (processed)
21	x0c90101t_cvt.d0h x0c90101t_cvt.d0h.tab	512 335	1024 1	16 Nc=	23/08/90 20	RAqr (unprocessed)
22	x0c90101t_cvt.shh x0c90101t_cvt.shh.tab	965 49	1	16 Nc=	23/08/90 3	RAqr (standard header)
23	x0c80106t_cvt.c0h x0c80106t_cvt.c0h.tab	512 335	512 1	16 Nc=	24/08/90 20	SN1987A (processed)
24	x0c80106t_cvt.clh x0c80106t_cvt.clh.tab	512 335	512 1	16 Nc=	24/08/90 20	SN1987A (processed)
25	x0c80106t_cvt.d0h x0c80106t_cvt.d0h.tab	512 335	512 1	16 Nc=	24/08/90 20	SN1987A (unprocessed)
26	x0c80106t_cvt.shh x0c80106t_cvt.shh.tab	965 49	1	16 Nc=	24/08/90 3	SN1987A (stand. head.)
27	x0cj010bt_cvt.c0h x0cj010bt_cvt.c0h.tab	512 335	512 1	16 Nc=	28/08/90 20	FOC PSF (F501N)
28	x0cj010bt_cvt.clh x0cj010bt_cvt.clh.tab	512 335	512 1	16 Nc=	28/08/90 20	FOC PSF (F501N)
29	x0cj010bt_cvt.d0h x0cj010bt_cvt.d0h.tab	512 335	512 1	16 Nc=	28/08/90 20	FOC PSF (F501N)
30	x0cj010bt_cvt.shh x0cj010bt_cvt.shh.tab	965 49	1	16 Nc=	28/08/90 3	FOC PSF (F501N)
31	x0bq0102t_cvt.c0h x0bq0102t_cvt.c0h.tab	512 335	512 1	16 Nc=	23/08/90 20	R136 (processed)
32	x0bq0102t_cvt.clh x0bq0102t_cvt.clh.tab	512 335	512 1	16 Nc=	23/08/90 20	R136 (processed)
33	x0bq0102t_cvt.d0h x0bq0102t_cvt.d0h.tab	512 335	512 1	16 Nc=	23/08/90 20	R136 (unprocessed)
34	x0bq0102t_cvt.shh x0bq0102t_cvt.shh.tab	965 49	1	16 Nc=	23/08/90 3	R136 (standard header)
35	x0cj010ct_cvt.c0h x0cj010ct_cvt.c0h.tab	512 335	512 1	16 Nc=	28/08/90 20	FOC PSF (F346M)
36	x0cj010ct_cvt.clh x0cj010ct_cvt.clh.tab	512 335	512 1	16 Nc=	28/08/90 20	FOC PSF (F346M)

37	x0cj010ct_cvt.d0h	512	512	16	28/08/90	FOC PSF (F346M)
	x0cj010ct_cvt.d0h.tab	335	1	Nc=	20	
38	x0cj010ct_cvt.shh	965		16	28/08/90	FOC PSF (F346M)
	x0cj010ct_cvt.shh.tab	49	1	Nc=	3	

log-3

```

FILE NO. 1
RECORD 1
LENGTH 288
SIMPLE = T / FITS STANDARD
ER OF AXES 16 / FITS BITS/PIXEL
NAXIS1 = 800 / NAXIS2 = 800 / NAXIS3 = 4 / BIPIX = 3 / NUMB = 800 /
NAXIS = 800 /
BLOCKED =
T / Tape may be blocked
There maybe standard extensions
+ EZERC 1836 / PSIZE of original image 0.0E0 / EXTEND = T /
ESCALE = 1.0E0 / REAL = TAPE*BSCALE
OPSIZE = 1836 / PSIZE of original image 0.0E0 / ORIGIN =
STSCI-STSDAS /
/ Date FITS file was created IRAFNAME= 'Wobs0102.cvt.dqh' / NAME OF IRAF IMA
GE FILE IRAF-MIN= 3.25101E2 / DATA MIN IRAF-MAX= 4.09500E3 / DATA MAX
P = 16 / DATA BITS/PIXEL IRAFTYPE= 'SHORT' IRAF-B/
SDASMGNL= 4 / Number of 0
roups in original image CRVAL1 = 77.187167355389
CRVAL2 = -68.766756504661
AL3 = 788(6876.18)u79 CRPIX1 = 870. CRV
E69. CRPIX2 = 2.529755E-5
CD1_1 = -1.141240E-5
CD1_2 = 1.141240E-5
CD2_1 = 2.529755E-5
CD2_2 = 3.25000E2 / DAT
A MAX DATAMIN = 4.09500E3 / DATA MAX
ORIENTAT= 3
MIR REVR= -24.2814
ERRCNT = 0
LPKTIME= '16-AUG-1990 23:35:12.42'
FPKTIME= '16-AUG-1990 23:38:58.05'
CITYPE1 = 'RA---TAN'
CITYPE2 =
CITYPE3 = 'TIME'
DETECTOR= 1
DEZERC = 0.
GOODMIN = 0.
GOODMA
X = 0.
SCFIERRS= 0
GPIXELS = 0
DATAEANS= 0
CALIBDEF=
ATTCDEF=
ATCDSAT = 0
BADPIXEL= 0
DATAICST= 0
PHOTMCDE= 1.
PHOTZPI = 0.
PHOTFLAN=
PHOTBW = 1.
PHOTPLAM=
/ GROUP PARAMETERS: OSS
GROUP PARAMETERS: PCGCS

```

cond filter number (0-48) PFILTER1= 23 / Preflash Filter 1 num  
ber (0-48) PFILTER2= 16 / Preflash Filter 2 number (0-48)

/ EXPOSURE TIME AND RELATED INFORMATION EXPTIME = 0.2200000E+04  
of exposure time (seconds) WEXP0DUR= 0.1100000E+09 / Desired duration  
of exposure (seconds) NSBCLOSE= 6 / Number of B shutter closes  
PREFTIME= 1.3000000E+02 / Preflash time (seconds) DARKTIME  
= 0.2300000E+04 / Dark time (seconds) NSHUTCYC= 3 / Number of shu  
tters cycles WEXP0TIM= 0.2300000E+08 / Time of major frame pulse preced  
ing exposure stSCFATIME= ' / First shutter open time (yyocdhmmss) PSTIR  
TIME= '199 .228:23:38:37' / Predicted observation start time (yyocdhmmss)  
59:37 / Predicted observation stop time (yyocdhmmss)

TRGNAME= '3181' / target name  
RTASNTRG= .77186737650E+02 / right ascension of target  
DECLNTRG= -0.687617  
34912E+02 / declination of target EPOCHTRG= 0.2000000E+04 / epoch  
of coordinate system

TECTEMP = - .1000000E+01 / TEC temperature (Celcius)  
0.1131837E+02 / Bay 3 temperature (Celcius) WBA3PCIME  
tatus of Kelsall spot lamps: ON, OFF SHUTTER = ' / Shutter in place cur  
ring preflash: A, B, UNKNOWNFGSLOCK = ' / FGS Lock Status: FINE, CCARSE, LCST, NO

/ IMAGE TYPE CHARACTERISTICS IMAGETYP= 'SCIENCE'  
/ image type: SCIENCE/BIAS/DARK/PREF/FLAT/SPECIALCDBSFILE= 'NO' / CDBS file: GENE  
RIC/BIAS/CARK/PREF/FLAT/MASK/AT

/ RSDP CONTROL KEYWORDS MASKCOR  
R= 'YES' / Do mask correction: YES, NO, DONE ATODCORR= 'YES'  
' / Do A-to-D correction: YES, NO, DCNE BLEVCCRR= 'YES' / Do bias leve  
l correction: YES, NO, DONE BIASCRR= 'YES' / Do bias correction: YES, NO, DO  
NE PREFCORR= 'YES' / Do preflash correcticr: YES, NO, DONE PUR  
GCORR= 'NO' / Do purge correction: YES, NO, DONE DARKCORR= 'YES'  
' / Do dark correction: YES, NO, DONE FLATCORR= 'YES' / Do flat  
field correction: YES, NO, DONE DCSATMAP= 'YES' / Output Saturated Fixel Map:  
YES, NO, DONE DOHISTOS= 'YES' / Make histograms: YES, NO, DONE  
OUTDTYPE= 'REAL' / Output image datatype: REAL, LONG, SHORT

BRATION REFERENCE FILES MASKFILE= 'wref\$a51212ow.r0h' / name of the input DGF o  
f known bad pixels ATODFILE= 'wref\$a2dwf.r1h' / name of the A-to-D conversion file  
BLEVFILE= 'wcal\$wbs102t.x0h' / Engineering file with extended register data BLEVDLFI= 'wca  
lsw bs112t.q1h' / Engineering file DGF  
name of the bias frame reference file BIASDFIL= 'wref\$a421549nw.b2h' / name of the bias fr  
ame reference DGF PREFFILE= 'wref\$prefwfa.r3h' / name of the preflash reference file  
PREFDFIL= 'wref\$a421551qw.b3h' / name of the purge reference file PURGFILE=  
'wref\$9ck127hw.r4h' / name of the purge reference file FLRGDFIL= 'wref\$9ck1027hw.b4h'  
' / name of the dark reference DGF DARKFILE= 'wref\$darkwf.r5h' / name of the dar  
k reference file DARKDFIL= 'wref\$a421550bw.b5h' / name of the dark reference DGF  
FLATFILE= 'wref\$a3u1531lw.r6h' / name of the flat field reference file  
IL= 'wref\$a3u15317w.b6h' / name of the flat field reference DGF FLATCF

